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09/674,620	11/03/2000	Hidekuni Moriya	Q60962	1567

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EXAMINER	
ROSARIO-VASQUEZ, DENNIS	

ART UNIT	PAPER NUMBER
2621	9

DATE MAILED: 06/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/674,620	MORIYA ET AL.	
	Examiner	Art Unit	
	Dennis Rosario-Vasquez	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03/11/2004,Amend. C*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment was received on March 11, 2004 and has been entered and made of record. Currently claims 1-14 are pending.

Specification

2. Due to the amendment, the objections to the specification and abstract have been withdrawn.

Response to Arguments

3. Applicant's arguments, see amendment pages 8,9, filed March 11, 2004, with respect to the rejection(s)of claim(s) 1,13 and 14 under Fujita et al. (US Patent 5,659,402 A) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Yamashita et al. (US Patent 5,185,812 A).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al. (US Patent 5,659,402 A) in view of Yamashita et al. (US Patent 5,185,812 A).

With regard to claims 1,13, and 14 Fujita et al. discloses a computer (Fig. 3 and col. 12, lines 30-48) method of a system (fig. 1 and 5) wherein an image data retouching apparatus (fig. 1 or 5) for determining the characteristic (character, dotted, or gray-scale are characteristics) of each picture element (or pixel) in image data which express images in a dot matrix form (Fig. 2 represents a matrix of pixels or dots.) in multiple tones (or "multivalued density data" at col. 6, line 13) and retouching each picture element in a way appropriate to its characteristic (Fujita states," When the constituent pixels of an image are successively processed as an object pixel [or the "X" pixel of figure 2], it is first judged which image area of a character image area and gray-scale image area each object pixel belongs to, and then a proper image processing of the respective image areas can be realized by performing a processing operation for the object pixel in accordance with the judgment result"(col. 1, lines 33-39).), said apparatus comprising:

an image data acquisition unit (Fig. 1, num. 1 and 2) for acquiring said image data;

a picture element characteristic determining unit (fig. 1, num. 5) for figuring out differences (Figure 1, num. 5 figures out a difference as shown as an equation in col. 6, line 22) of tone levels (or "multivalued density data") between object or ("X") picture elements (or A,E,B, X-2,X-1,X+1,X+2,C,H,D:fig. 2, labels A,E,B, X-2,X-1, X, X+1, X+2,C,H,D are object picture elements. Using figure 2, Fujita states," When each of the pixels is processed as an object pixel X, the density [or multiple tone] data (multivalued density data after the shading correction [of figure 1, num 4]) of pixels A, B, C and D at

the four corners of a 3X3 pixel matrix having the object pixel X in the center thereof are used. Provided that characters A, B, C and D also denote the respective density data of the pixels A, B, C and D, a quadratic differential value S(X) and the square SS(X) of the quadratic differential value S(X) are calculated... (col. 6, lines 12-21)."), which are the picture elements [or pixels] of the image data acquired by said image data acquisition unit, and neighboring picture elements (fig. 2, boxes labeled A, B, C, D) in a prescribed range (The range is the 3X3 pixel matrix as described above) around the object picture elements (The object picture element is "X" as described above), and determining the characteristic of each object picture element by comparing (Fujita et al. states," In this embodiment, the judgment [or comparison] is made on which image area among the character image area, gray-scale image area and dotted image area the object pixel X belongs to, by employing the aforesaid square value SS(X) and the square sum SIGMA.SS(X) as principal determination values (col. 6, lines 35-39).") the differences (SS(X) and the square sum SIGMA.SS(X)) so figured out with a prescribed model distribution (Figure 4 is a prescribed or conceptualized area for distributing various images using the square sum SIGMA SS(X) as depicted in figure 4,
top left corner.); and

an image data retouching unit (fig. 1, num. 6 and 7) for executing prescribed image processing according to the characteristic of picture elements determined (Using figure 1, Fujita et al. states," The differential filter 6 performs a processing operation suitable for the character image data, and serves to emphasize the profile of the character image by making the boundary between black pixels and white pixels distinct.

The integrating filter 7 performs a processing operation suitable for the dotted image data, and serves to smooth the dotted image data (col. 5, lines 25-31).") by said picture element characteristic determining unit.

Fujita et al. does not teach a picture element characteristic determining unit for figuring out the distribution of differences as required of claim 1, and teaches figuring out differences between pixel values and sums all differences "S" for a thresholding operation as a classification of gray-scale, dotted, and character image area values (col. 9, lines 24-46. Fujita et al. does suggest classifying a pixel in different areas as depicted in figure 4 at col. 9, lines 24-28.

However, Yamashita et al. teaches a picture element characteristic determining unit (Figure 9,num. 19:"DEFECT DETERMINING CIRCUIT") uses a threshold as depicted in figure 3, numerals 31-33) for figuring out (or determines) the distribution (Fig.9, num. 18 and detailed in fig. 2, num. 25, 26 and "level" is a distribution of maximum, minimum, and level values, respectively.) of differences (Figure 9, num. 18 subtracts gray levels between picture elements: Fig 2, numeral 21 depicts figure 9, num. 18 as an array (numerals 1-9) of pixel values or picture elements that are subtracted (Fig. 2, numerals 23a-d subtracts.) from each other (Element pair arrays 6 and 4, 2 and 8, 3 and 7, 1 and 9 are subtracted from each other).) of tone (multi-valued data at col. 2, lines 26,27) levels between object picture elements (fig. 2, numerals 1-9). Note that figure 9, num. 19 or the characteristic determining unit uses a classification device (fig. 9, num. 20 and in detail at fig. 11 ,num. 205) result (Fig. 9, label: "FEATURE FLAG") as an input in addition to the figuring out the distribution of differences as

figured out in fig. 9, num. 18.

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify Fujita et al.'s sum of difference values ("S") section (fig. 1, num. 5) that classifies using a threshold according to the above discussion of figure 4 with Yamashita et al.'s fig. 9, numerals 18,19, and 20. Numeral 18 includes a difference in distribution, numeral 19 includes a threshold, and 20 includes a classification (fig 11, num. 205 is a detail of figure 9, num. 20.), because Yamashita et al.'s fig. 9, numeral 18 provides misregistration data between sensed and design or model data (col. 6, line 24-27) and fig. 9, num. 20 extracts patterns for a further comparison using figure 9, num. 18. Figure 9, numeral. 19 uses the results of figure 9, numerals 18 and 20 to detect a defect in pattern data (fig. 9, num. 5).

With regard to claim 2, Fujita et al. discloses an image data retouching apparatus(fig. 1 or fig. 5) as claimed in claim 1, wherein said picture element characteristic determining unit (fig. 1, num. 5 or in detail at figure 5, num. 5) utilizes for determination the distribution (or "S") in a range of smaller differences ("absolute value is small") and the distribution in a range of greater ("absolute value...is large") differences (or (Fujita et al. states, "That is, the absolute value of the quadratic differential [or difference] value S is large in the character [or edge] image area, while the absolute value is small in the gray-scale image area. Therefore, the discrimination between the character image area and gray-scale image area can be achieved by judging on the magnitude of the quadratic differential value S (col. 1, lines 63-67 and col. 2, lines 1,2) .") The results of figure 5, num. 31 computes the distribution "S" which

is inputted into the data retouching apparatus, fig. 5, num. 6 and 7.

With regard to claim 3, Fujita et al. discloses an image data retouching apparatus(fig. 1 or fig. 5), as claimed in claim 1, wherein said picture element characteristic determining unit (fig.1 or 5, num. 5) utilizes for determination the positive or negative polarization of said distribution (Fujita states," The density variation value may be either a positive or negative value because it is calculated based on density differences between the object pixel and the respective peripheral pixels around the object pixel (col. 2, lines 61-64).") Note that the density differences "S" or distribution is calculated in fig. 5, num. 5 at numeral 31.

With regard to claim 4, Fujita discloses a method of a system wherein an image data retouching apparatus(fig. 1 or 5), as claimed in claim 1, wherein said picture element characteristic determining unit (fig. 5, num. 5 comprises numeral 41 that determines whether "S" is in the character or edge image area (col. 12, lines 60-65.) determines picture elements to be edge picture elements (or character image elements) if the distribution "S" in said range of greater differences is dominant(If "S" passes three judgments (fig. 5, num. 41-43) then "S" is judged to be a character image.) and if said distribution is polarized positively ("S" is an absolute value).

With regard to claim 5, Fujita discloses a method of a system wherein an image data retouching apparatus (fig. 1 or fig. 5), as claimed in Claim 1, wherein said image data retouching unit (fig. 1, or 5, num. 6 and 7) executes sharpening of images if said object picture elements are determined to be edge picture elements (Using figure 1 or 5, Fujita et al. states," The differential filter 6 performs a

processing operation suitable for the character image data, and serves to emphasize the profile of the character image by making the boundary between black pixels and white pixels distinct...These data [above mentioned "character image data"] are then sent to a selector circuit 9. A selection signal is input to the selector circuit 9 from the area separating circuit 5. In response to the selection signal, the selector circuit 9 selectively outputs data from the differential filter 6 (col. 5, lines 25-28 and 34-38)."

With regard to claim 6, Fujita et al. discloses a method of a system wherein an image data retouching apparatus(fig. 1 or 5), as claimed in Claim 5, wherein said sharpening forms a matrix (fig. 2) having a prescribed number (3X3) of picture elements centering on an object picture element(X of figure 2) and is executed by a sharpening filter (Fig. 5, num. 6) wherein a prescribed coefficient (Using figure 5, Fujita et al. states, "By thus performing the image area judging process, the density data [or coefficient] of a pixel belonging to the dotted image area or gray-scale image area can be prevented from being mistakenly subjected to the differential filtering process which is intended for a pixel belonging to the character image area (col. 10, lines 5-9).") to emphasize the object picture element is set in each picture element position in the matrix (Fujita et al. states, " When it is judged which image area of the character image area and gray-scale image area the object pixel X belongs to, reference is made to the density values of four pixels A, B, C and D which are located at the four corners of a 3X3 pixel matrix having the object pixel X in the center thereof (col. 1, lines 45-49)."

With regard to claim 7, Fujita et al. discloses a method of a system wherein an image data retouching apparatus (fig 1 or 5), as claimed in 1, wherein said picture element characteristic determining unit (fig. 1 or 5, num. 5) determines picture elements to be moire picture elements (Fujita et al. states," In accordance with this embodiment, however, since the dotted image data sent to the error diffusion circuit 11 is preliminarily smoothed by the integrating filter 7, the moire is not generated. That is, by processing the dotted image data in the integrating filter 7, the dotted image data can be processed in the same manner as the gray-scale image data (col. 5, lines 57-63) [Using figure 1, the area separating circuit 5 indirectly determines whether a moiré is present by determining whether a dotted image data is present; as a result, all dotted image data are susceptible to moiré which are smoothed by the integrating filter 7].") if the distribution "S" in said range of smaller differences is dominant(If "S" passes three judgments (fig. 5, num. 41-43)) and if said distribution is polarized positively(An absolute value of "S" is calculated.) or negatively (Note that negative values can be used as discussed in Fujita et al., col. 2, lines 61-64.)

With regard to claim 8, Fujita et al. discloses a method of a system wherein an image data retouching apparatus(fig. 1 or 5), as claimed in Claim 1, wherein said image data retouching unit (fig 1 or 5, num. 6 and 7) executes smoothing of images (Fujita et al. states," The integrating filter 7 performs a processing operation suitable for the dotted image data, and serves to smooth the dotted image data (col. 5, lines 29-31).") if said object picture elements are determined to be moire picture elements (addressed in claim 7).

With regard to claim 9, Fujita et al. discloses a method of a system wherein an image data retouching apparatus(fig. 1 or 5), as claimed in Claim 8, wherein said smoothing forms a matrix having a prescribed number of picture elements centering on an object picture element and is executed by a smoothing filter wherein prescribed coefficients are set to roughly average (Using equation (15) at column 10, line 65 an average (FOUT(X)) has 4 values that are determined and divided by 4.) said object picture elements in different picture element positions (Fig. 2, the labeled boxes at "X", "X+1","H", and "D") in the matrix (Fig. 2).

With regard to claim 10, Fujita et al. discloses a method of a system wherein an image data retouching apparatus (fig. 1 or 5), as claimed in claim 1, wherein said image data retouching unit (fig. 1 or 5, num. 6 and 7) obtains a retouching value (fig 5, numerals 6 and 7 has an input arrow as the retouching value from numeral 31) for the luminance value (gray scale value) of said image data (fig. 5, num. 21 is RAM that stores the multivalue data.), and adds(The data values from numerals 31 and 21 are added together in fig. 5, num. 6 and 7 using the corresponding arrows.) the retouching value to the tone values (Fig. 6 and 7 has another set of input arrows from num. 21 as the tone vales or multivalue data.) of element colors (Multivalue data is color data.) to retouch the image data.

With regard to claim 11, Fujita et al. discloses a method of a system wherein an image data retouching apparatus(fig. 1 or 5), as claimed in claim 1, wherein:

in retouching the image data of the picture elements, an image data attribute specifying unit (fig. 5, num. 35 selects a certain filter based on attributes or a threshold.) for acquiring specification of the attribute (Fig. 5, num. 32 is an assigned threshold SSA,SSAM,SSC,BEDGE and BEGDEH of attributes that specify character, grey, and dotted images.) of image data to be handled is caused to execute the function thereof, and

said image data retouching unit (fig. 1 or 5) is caused to execute the function thereof on the basis of the image data having the attribute acquired by said image data attribute specifying unit (The data retouching unit corrects the image data based on the selection fig. 5, num. 35 of a filter using attributes acquired by fig. 5, num. 35).

With regard to claim 12, Fujita et al. discloses a method of a system wherein an image data retouching apparatus(fig. 1 or 5), as claimed in claim 11, wherein said image data attribute specifying unit(fig. 5, num. 35) specifies luminance or "gray-scale image" signals as the attribute when high-speed image data retouching is desired (Fujita et al. states," Therefore, the object pixel can be properly processed at a high speed in accordance with the type of image area to which the object pixel belongs(col. 3, lines 29-31).") and specifies element color signals constituting an image as the attribute (This element was addressed in claim 1 at "multivalued density data") when high-quality image data retouching is desired (Fujita et al. states," The present invention relates to image processing methods and image processing apparatuses for properly

processing a character image, gray-scale image and dotted image for high-quality image reproduction...(col. 1, lines 5-9)."

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Rosario-Vasquez whose telephone number is 703-305-5431. The examiner can normally be reached on 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Boudreau can be reached on 703-305-4706. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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